A SECOND-GENERATION STRUCTURALIST TRANSFORMATION PROBLEM: THE RISE OF THE INERTIAL INFLATION HYPOTHESIS

BY

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Abstract

The paper analyzes the rise of the Latin American-based inertial inflation theory. Starting in the 1950s, various traditions in economics purported to explain the concept of "inflation inertia". Contributions ranging from Celso Furtado and M.H. Simonsen to James Tobin anticipated key aspects of what later became the inertial inflation hypothesis, building it into either mathematical or conceptual frameworks compatible with the then contemporaneous macroeconomic theory. In doing so, they bridged the analytical gap with the North-American developments whilst maintaining the key features of the CEPAL approach, such as distributional conflicts and local institutional details. These contributions eventually influenced the second moment of the monetarist-structuralist controversy that unraveled in the 1980s. The paper also highlights how later works by structuralist economists gradually stripped the inertial inflation approach of its previous substance and form, thereby unearthing tensions among Latin-American structuralists that led to the eventual decline of this research program.

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I. INTRODUCTION

This paper provides a historical account of the process of theoretical development of the heterodox approach to inflation stabilization theory in Latin America. The purpose is to make sense of the rise of the "inertial inflation" research program that informed many stabilization attempts in the region in the 1980s. It also aims at parsing out the main points of instability that beset this approach, which eventually led to its decline. Central to this narrative is the unraveling theoretical feud, from the early 1950s to the late 1980s, on the causes of - and the adequate policies to curb - inflation that opposed monetarists to structuralist economists. This is done through the analysis of the changing economic landscape and the challenges posed by them to the contenders of both "schools of thought". This persisting opposition is a useful organizing device to make stabilization debates up to date.[1]

It begins with a brief analysis of the debate between orthodoxy and heterodoxy in the 1950s, when the Economic Commission for Latin America (ECLA, henceforth CEPAL) began its *tour de force* against the theoretical and policymaking influence arriving from the Northern hemisphere. The then recently established Keynesian orthodoxy on macroeconomic matters faced the opposition of the so-called monetarist counter-revolution, beginning in the early 1960s and reaching its peak-influence along the 1970s with the overall diagnosis of "stagflation" in the aftermath of Richard Nixon's devaluation of the dollar, the dissolution of the Bretton Woods policy apparatus and the 1973 oil shock. It follows through the intense reaction among the academic economists to the stabilization strategies proposed by the IMF to the debt-overburdened countries in Latin America

[1] Nowadays, the opposition between monetarism and structuralism is pivoted around the seemingly irreconcilable monetarist-like policies, such as interest-rate-driven inflation targeting regime, and the heterodox appeal to targeting employment and exchange rate within the broader picture of developmental trajectory of the economy.

and in other parts of the world in the aftermath of the 1982 debt crisis triggered by the Mexican default on external debt service payments in August of that year. The ensuing economic landscape provided multifaceted challenges to policy makers, which elicited an intellectual *ambience* highly fertile for theoretical innovation on matters of stabilization policy.

The Brazilian chapter of this broader debate displayed a high level of theoretical sophistication and is thus the focus of the final sections. However, it is linked to the international scope of such issues, for a complex set of interrelations explains the relative convergence of views on stabilization matters that encompassed the transition economies of the former Soviet Union and the emerging economies that faced severe economic instability for different reasons. Following this introduction, the first section deals with the first round of monetarist-structuralist debate between the 1950s and late 1970s and highlights the contributions by Celso Furtado and Julio Olivera. Section 2 undescores how Mario Henrique Simonsen's and James Tobin's works connected the two moments of this theoretical debate. The third part delves into the second round of the debate, while the fourth and fifth sections treat the internal puzzles that undermined the inertial inflation hypothesis. The last section concludes by weaving the threads of the narrative and pointing to the future research agenda.

II. FIRST ROUND: INFLATION-INDUCED VS. INFLATION-FEEDING BOTTLENECKS

Understanding policy requires assessing the theories that give it support. This section outlines the long-lived debate over inflation theory and price stabilization policy, the so-called "structuralist-monetarist stabilization debates" that took place in the 1950s and the 1960s (see Baer and Kerstenetzky 1964, Boianovsky 2012 and Bianchi 2016). [2]

[2] A detailed analysis of complementary aspects of the feud can be found in Grunwald's analysis in Hirschman (1962, p. 108). Takami (2015) tackles the North-American chapter of debates on

The historical context of this debate highlights a State-led industrialization process that was set in motion in the postwar period, having as the main features a persistently high inflation, resilient balance of payments deficits, secular structural public deficits and hard-to-overcome concentration of wealth (see Simonsen 1995 for a brief historical overview of inflation in Brazil). Among these traits, inflation has become a dominant aspect of the region´s economic history, a phenomenon deeply embedded in its institutional fabric and mindset. It grew to become the forefront enemy and triggered the innovative streak of analytical breakthroughs that undergird the successful stabilization plans in the early 1990s (see Bastos 2002).

The monetarist-structuralist controversy was staged in the post-War period and can be simply defined as "market competition vs. planning" as best promoters of economic development. The controversy gained momentum due to theoretical and political opposition to the anti-inflationary programs in Latin America. These were sponsored by the Bretton Woods Institutions, such as the International Monetary Fund (henceforth, ***IMF***) and the Bank for International Development (**BID**), later renamed as World Bank (Hirschman 1962, p. 82). Actively opposing these policies was the emerging Latin American lineage of economic thought, named *structuralists*. They proposed that inflation was the result of underlying structural imbalances in the economy, not of excessive monetary emission (Rangel 1963 and 1985).

The structuralist school advanced that the economy was irreparably inflexible due to the widespread existence of bottlenecks and obstacles that inhibited changes. The underdeveloped technological apparatus explained a chronically inelastic supply. State action was needed, as unassisted market processes would have limited power in promoting economic progress (Little 1982, pp. 20-21). Moreover, the price system was not believed to be an ideal resource-allocating

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inflation in the 1950s and Bronfenbrenner and Holzman (1963) provides a through survey of inflation theories in that period.

device.[3] The market power of oligopolistic corporations, the specific inelasticity of the supply of agricultural products and the secular effective demand problem due to highly concentrated income distribution profile that marked Latin American economies explained the dynamics of inflation. For economists such as Raúl Prebisch, Celso Furtado, Juan Noyola Vásquez and Osvaldo Sunkel[4], inflation in underdeveloped countries was an outcome of a deformed economic structure. In order to adequately understand rising prices, the framework should take heed of the interaction between 'basic inflationary pressures' – resulting of structural rigidities - and the 'propagating mechanism' of competing income claims accommodated by monetary expansion. Inflation was then sustained by excess competing claims of societal groups over the economy´s output, which was given by a rigid productive structure filled with bottlenecks and constraints.[5] The policy implications were that dealing solely with inflation only attacked the symptom, not the cause; tackling the inadequacies of the productive structure would render inflation control more effective.

The term "monetarist" was coined to denote these specific set of policies, which usually included tighter credit constraints, cuts in public expenditures, partial wage freezes, devaluation and the repeal of various types of subsidies and direct controls; it was first used by Roberto Campos,

[3] For instance, the irresponsiveness of investment to changes in the interest rate; the adverse effects of exchange devaluation over the balance of payments, later dubbed "elasticity pessimism"; and the limited and varied effects of wage dynamics on the distribution of labor. For more details, see Arndt (1985, p. 151).

[4]A survey of early contributions can be found in Boianovsky (2012), Seers (1962) and Felix (1962).

[5] As for applications to specific cases, Furtado ([1959] 1967) set forth a comprehensive account of Brazilian inflation. Osvaldo Sunkel (1958) followed Noyola (1956) and provided a structuralist analysis of the Chilean inflation, while Kaldor analyzed the dynamics of Mexican inflation (Kaldor 1957, Palma and Marcel 1989)

one of the monetarist contenders, alongside Eugenio Gudin (Boianovsky 2012). In a nutshell, monetarists held that inflation was always and everywhere a monetary phenomenon. (Friedman 1963 and Gudin 1962) and, therefore, could only temporarily promote development (as economic growth was dubbed at the time). Lasting prosperity was however claimed to be incompatible with the inflation and should, therefore, be curbed as quickly as possible, before it degenerated into unbearable tensions (social and economic). The only effective method, according to monetarists, seemed to be the curbing of excess demand, through a prudent combination of monetary and fiscal policies supplemented by international financial assistance. As a response to structuralist claims, most of the alleged supply inelasticities and bottlenecks were not considered autonomous or structural, but rather consequences of price and exchange rate distortions generated during the course of the inflationary process itself; (Campos 1962, pp. 69-70). In sum, based on Latin American experience, Campos alleges that bottlenecks were *originally inflation-induced*, even though at a later stage they may become *inflation-feeding.* [6]

Against this intellectual melting pot, a few seminal contributions anticipated not only the inner workings of a persistently high inflationary process, but also the nearly insurmountable obstacles policymakers in the region would face attempting to control it a few decades ahead. Our focus here lies on the "inertial inflation" hypothesis, which finds its origins at this first moment of the controversy, although its heyday was yet to come. We highlight the contributions made by Celso Furtado, Julio Olivera and Mario Henrique Simonsen.

In his *magnum opus*, "*Formação Econômica do Brasil*", Furtado ([1959] 1967, chapter 35) tackles the "two sides of the inflationary process", that is, "the reason why prices rise on a persistent

[6] For further elaborations of this view, see Simonsen and Campos (1975).

basis" and "the effects of such rise on the economic process"[7]. Inflation and distribution are thus two sides of a single process. Furtado starts with a seemingly fictitious and extreme case (at least at that time), that of a dynamic equilibrium concept of distributionally neutral inflation. Inflation can be "neutral" in its effects on the real economy when "*all prices rise simultaneously and at the same pace*". A neutral inflation implies that rising price levels do not affect the underlying distributional profile.[8] Under this dynamic concept of neutrality (e.g. one-year-long circuit), stabilization would engender the very outcome the system is defending itself from, that is, the redistribution of real income. At any point during this period, "*there is bound to be a group ahead of others in the struggle for the redistribution of income*". Such a group would benefit enormously from the stabilization of the price level at that point (Furtado [1959] 1967, p. 239). Dynamically speaking, even if one could find an "*average pattern of income distribution in a one-year stretch*" that stabilized prices around this pattern, through a series of price and wage adjustments, it was unlikely that every group would be entirely satisfied with the outcome. If all groups are equipped to defend

[7] Furtado touches on the problem of "historical tendency" to price level rises in the Brazilian economy. Although one cannot deny that price rises result from monetary expansion,, "inflation [was] fundamentally a struggle among groups for the distribution of real income and the rise of the price level is but an exterior manifestation of such phenomenon" (pp. 239-240).

[8] In Furtado's own words: "*We may conceive of a situation in which all social groups develop defense mechanisms, so as to impaired or even preclude the distribution of real income required by the introduction of a disequilibrium into the system. Such a situation, if taken to extremes, is likely to engender a sort of neutral inflation, i.e. inflation with no real effects. Prices would rise permanently with no repercussions on the way income is redistributed*" (Furtado [1959]1967, p. 238 – my translation and emphasis added).

themselves (such as indexation of prices, wages and contracts) and have a clear notion of the position they occupy in that moment, the " *elevation of the price level goes on displacing the system from one unstable equilibrium position to the other*" with no automatic countervailing process to restore the system to a stable equilibrium position (p. 239). To this effect, stabilization becomes quite troublesome.due to this staggered structure of price and wage behavior.

Due to this process-based understanding of a chronic inflationary process, structuralists contended that an orthodox monetary policy tackled only the propagation factors of inflation, leaving its underlying causes unharmed. These latter comprised both supply rigidities (which generate chronic inflationary pressures), the monopoly pricing and social tensions that disseminate these specific upward price movements. Hence, a finite elasticity of supply and demand for goods implies that any change in relative prices will encounter a downward inflexibility of monetary prices and wages. These non-monetary pressures then compel authorities into monetary accommodation. Expansion of the money supply becomes nearly inevitable, once the social costs entailed by recession-feeding monetary shortages are acknowledged.

Although notions of monetary endogeneity, lags and expectations had already been mentioned by Sunkel (1958), Julio Olivera (1960 and 1964) slightly shares the focus of inflation theory on the causes of such imbalances and maladjustments of prices along the chain of production with its propagating effects upon price behavior; hence the notion that structural inflation induced monetary accommodation. If money is a passively adjusting variable, rather than a fully controllable exogenous one, Olivera argued, a non-monetary theory of inflation is better suited to portray economies fraught with such institutional and structural rigidities, for it looks "beneath the monetary surface, into the underlying region of physical flows, real prices and sectional disequilibria" (Olivera 1964, p. 322).

In an attempt to accommodate the structuralist inflation theory in the emerging procedure of mathematical modeling, Olivera (1967) formalized his argument in a two-sector model, in which differences in elasticity of demand and supply promote sustained structural pressures over prices, termed "structural inflation". In one equation Olivera decomposes inflation into the "structural inflation multiplier" and "the structural inflation multiplicand" or the autonomous component of inflation. The multiplier depends inversely on the degree of flexibility of both markups and wages. The "multiplicand" is in turn determined by the relative elasticities of supply and demand that dictate how amplified are the pressure on prices arising from excess demand over the supply of the non-progressive sector.[9] Therefore, changes in relative prices prompt a rise of the price level. The magnified effects of both the multiplier and the multiplicand of structural inflation are, once again, due to the sluggish factor movements that render the structure of supply rigid.[10]

[9] Extending Olivera's presentation a little further, Walras' law acts in preventing the transmission of relative price changes to absolute prices only if the system adjusts rapidly. If the transition from one equilibrium point to another is sluggish, inflation ensues, in order to restore some consistency to the system. Two extreme cases are those of an absolute inflexibility of wages and markups and the counterpart perfect flexibility of markups. The former implies a constant structural inflation rate proportional to the tightness of the productive bottleneck, whereas the former implies an explosive process leading to a hyperinflation. The intermediate case is of much interest, for it depicts the high and chronic inflationary process the previously upset Latin American economies for decades. Such non-monetary pressures are common, Olivera argues, along the process of structural change, like the one Latin America had been undergoing since the immediate post-War period.

[10] Whilst abandoning a primitive production structure (prone to balanced or unbalanced stagnation or decline) and moving toward a more advanced stage of development, a country is expected to experience a transition process mediated by some speed of economic growth; along with the latter

To sum up, structuralists emphasized that inflation resulted from deep-seated underlying causes due to uneven structural changes along a historical process of development. Such imbalances were triggered either by the government-sponsored import-substituting industrialization policy or by the tendency of Latin American economies to undergo balance of payments crises. These maladjustments then boost rising prices through either cost-push and/or demand-pull channels. Inflation was hence a manifestation of a deformed economy.[11]

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comes the warranted mobility of factors and, thus, relative price variations. That is why the conversion into a fully industrial economy is bound to combine some measure of factor mobility with an almost complete downward inflexibility of money prices. However, Olivera readily warns that, despite such "traits" regarding inflexibility of prices and immobility of factors, developing economies present the propensity to endure demand-pull inflation due to systematic public deficits and/or by investing more than available savings permit. Therefore, policymakers should strive to distinguish "structural inflation" from "structural proneness to inflation".

[11] In terms of anti-inflation measures, as Felix (1962, p. 83) admits, "specifics vary and the details are distressingly vague" for structuralists are clearly "more united as critics than as programmers". This lack of programmatic coherence straightened political constraints, as economists from this school became policy makers in the late 1950s and early 1960s. The stabilization experiences of Argentina and Brazil in the 1960s did not garner much social support for the structuralist stance, thereby raising many doubts as to the utility of debating stabilization and inflation theories (Baer 1967). There is hardly any doubt that the theoretical dispute was mostly directed at influencing top-down policy-making. And as inflation started growing beyond policy control along the 1960s (see Simonsen 1964), the idea that development irrevocably brought inflation with it not only underwent more intense political opposition, but also renewed theoretical criticism as well. In both north and south of the western hemisphere, inflation embarked on an upward trend, raising doubts as to the

On a methodological note, one should be aware that the models of first-generation CEPAL were mostly formalized in discursive form, that is, in a sea of words. As the mathematical revolution slowly settled in economics, Olivera's framework synthesized all the institutional bells and whistles so dear to structuralists in the values of fixed parameters, thereby assuming rather than explaining these features . This type of mechanical modeling was widely criticized by economists at CEPAL, for they overlooked the historical and institutional particularities of countries (see Palma and Marcel 1989, pp. 256-257), thus limiting the range of phenomena the theory encompassed.

A second point of relevance regards the strict dependence of the autoregressive component on the price of the wage goods, which singled out wage dynamics as a mechanical cause of inflation, overlooking, the role mark-up behavior plays in the process. Once the agricultural problem (that boosts food prices that feed into wages) is resolved, the inflation memory component would vanish. Consequently, the price level would depend entirely on the relative price variation and supply-demand discrepancies. However, this mechanism cannot explain alone the self-sustaining thrust of inflation on a systematic basis, unless it is simply assumed that both relative prices stability and demand and supply equality are seldom obtained.

Bacha (2003, p. 145) would later state, without explaining, that this understanding of structural inflation became, in the 1980s, the "inertial inflation hypothesis". But such connection is not trivial and requires a careful account of the changes in methods and communication of ideas. Olivera's contribution reveals a tension under the structuralist banner that could have prompted such changes. The methodological instability it created helps tracing the transition to the second

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sustainability of the Bretton Woods institutional arrangements, also known as post-War Fordism (Harvey 1989). The response came from the theoretical side, in the late 1960s, as a massive reaction not only to this "development-focused" way of thinking, but to a broader scale of Keynesian-derived approaches, known in the literature as the monetarist counter-revolution.

round of this debate in the late 1970s. Crucial to this shift is Mario Henrique Simonsen's hard-to-frame intellectual track. Surrounded by a complex setting of intellectual and institutional influences, Simonsen's work provides a connection between the 1960s development and stabilization debates and the later inflation stabilization controversy along the 1980s, followed by James Tobin´s take on the subject. Surprisingly, the relevance of Tobin's input has been greatly downplayed in the historical accounts of inertial inflation hypothesis. He one of the first writers to use the expression "inertial inflation" and his writings are filled with the conflict-based understanding of inflation. Both dimensions are crucial to better comprehend the diversity of inflation models that arose in the early 1980s and, amongst these, the emergence of the inertial inflation hypothesis.

III. THE SIMONSEN AND TOBIN CONNECTIONS

Mário Henrique Simonsen (1970) was the first to implement a formal feedback model of inflation in Brazil. As we have seen, Olivera (1967) had already delineated a simple inflation model with wage-indexation feeding into relative price changes that ultimately affected the rate of inflation. It is worthy of note that the parlance on inflation-related issues is mostly dominated by developmental issues, such as relative price changes, social aspirations, competing claims by income groups and distributive aspects of economic growth.

In a regime of chronic inflation, Simonsen added, the real incomes undergo an oscillatory behavior that is virtually consistent at the aggregate level, for when some groups obtain their peak real income, others are at their "trough" real income, others are midway, given the unsynchronized structure of income adjustments, later known as the "sawtooth model" of nominal incomes under inflation (Vera 2013). In aggregate terms, Simonsen argued, "*everything appears as if individuals, instead of living purchasing power cycles, remained in the comfortable stability of average income levels*", a point Furtado had made about the dynamic neutrality concept a decade before (see section above). The very asynchrony among the various income peak levels may turn inflation

economically viable. Were all the peak levels to be simultaneously obtained, the result would be the acceleration of price rises. It is thus the "*effect of previous peak levels on the aspirations and expectations that explain the difficulties faced by monetary stabilization*"[12] Simonsen (1964, p. 20) hence ascribed the central cause of such difficulties to the socio-political background, namely, "the incapacity of economic policy to confront the political problem of distributional compatibility".

Simonsen's writings reflect the standard of theoretical discourse at that period, although it absorbs by proximity the development-laden vocabulary of the Latin American economic debate. Simonsen synthesizes form and content in such a masterful way as to create an analytical framework for the subsequent exchanges among economists on inflation in Brazil.[13] Departing from

[12] However, the outcome of such dynamics is a "psychological byproduct" by which the previous peak purchasing power becomes a "benchmark for income claims" that only a few are willing to let go of. A kind of mystic is created around these "previous peak levels" and a conviction is established which states that they represent the minimum distributional justice people should aspire to (p. 19). He highlights the "mystic of acquired rights" concerning real wage levels. For further details on social tensions and stabilization policies, see Simonsen (1964, p. 87).

[13] As regard the inflationary problem in Brazil, Simonsen (1964) initially presented an eclectic account of the causes of inflation, with an entire chapter devoted to the "socio-political causes of inflation", by which he meant the distributional conflict dimension of chronic inflations. In the context of a rapidly State-led industrializing process, government sought to alleviate the dissatisfaction of different social groups by dividing the national output in parts that add up to more than the whole output. He mentions "the revolution of increasing aspirations" that contaminates the psychological attitude of economic agents in underdeveloped economies. In this setting, a low-income population that abruptly widens its "consumption horizons", through the "incidence of conspicuous consumption", tends to claim improvement in living patterns in a much faster pace

neoclassical reasoning, Simonsen moved in successive approximations closer to Brazilian reality. After a thorough analysis of the limitations faced by the quantity theory in explaining inflation in Brazil, in a later work (Simonsen 1970b), he found it more useful to illustrate his claim by means of a model of feedback inflation[14], as follows:

$$p = a_t p_{-1} + b g_t + c_t$$

where c_t denotes the autonomous component of inflation - or the "cost-push factor", or even the "supply shock component" – which reflects institutional changes such as minimum wage readjustments, tax increases or public utilities prices, as well as accidental events, such as bad crops or energy price rises. The parameter a is the feedback coefficient, that is, the pass-through inflation from the previous period to the present, and has values within the range $0 \leq a \leq 1$, except for the hyperinflationary periods, when its value may exceed unit. At last, g_t represents the excess demand component; there is a growth rate of output that provokes no inflationary pressure, given by y_n, so that $g_t = y_t - y_n$; being y_t the effective rate of growth of output at a given period t. By assuming the absence of adaptive expectations or automatic price adjustments regulated by law (indexation)

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than the one allowed by productivity growth. Simonsen is critical of the government´s weakness in obtaining "distributively compatible decisions", thereby fueling the "popular insensitivity to the causes of inflation", reinforcing a "philosophy of distributional incompatibility", by way of "ignorance or strategy" (Simonsen 1964, p. 16).

[14] Simonsen's model can be seen as a formalization of the feedback inflation already present in Sunkel (1958) and a local contribution to the international literature on inflation that had already incorporated the self-replicating pattern of chronic inflations. Earlier attempts at formalizing the inherent momentum of inflation had been successfully accomplished by Julio Olivera (1964 and 1967), but are not acknowledged by Simonsen in any of his works.

according to past inflation ($ap_{-1} = 0$), the model illustrates both the demand-pull (g_t) and the cost-push and relative price changes (c).

This simple expression conveys two important aspects of chronic inflations: the idea that autonomous shocks have a permanent – although gradually decreasing - impact on the level of inflation rate, which depends on the lagged inflation coefficient, given by the parameter *b*. Economies facing chronic inflation develop mechanisms (such as formal indexation) to reduce its harmful effects it imposes on economic organization of households, firms, markets and government.[15] Therefore, a more disseminated practice of indexation (higher value of parameter $\boldsymbol{a}$) leads to a higher equilibrium rate of inflation. [16]

Note that focus lies on the self-feeding component that gradually takes over the behavior of inflation, as the process of adjusting prices according to past inflation spreads throughout the economy. [17] This aspect is important in fleshing out the differences in emphasis between his

[15] For further detail on early warnings about the dangers of widespread indexation, see Simonsen (1964, p. 87).

[16] In the long run, when no demand shocks affect the economy, but the latter is still subject to the recurrence of autonomous random supply shocks, inflation converges to an equilibrium rate, or its steady state value, given by: $\boldsymbol{p^*} = \frac{\boldsymbol{c}}{\boldsymbol{1-a}}$, assuming $p = p_{-1}$, $c_t = c$ and $g_t = 0$. As an example, if there is a 2% annual shock coming from agricultural sector and the economy faces indexation in 60% of its prices, than the equilibrium inflation rate will be 5%. The value is reached by inputting the data in the formula given above: $p^* = 2\% \,/\, (1 - 0{,}6)$.

[17] Turning to context, Simonsen writes in a structuralist-dominated academic space. He adopted the vocabulary and the basic narrative framework in vogue at the time, although his writings manage to ascertain some independence regarding content. Simonsen's model allows for a more varied

inflation-feedback model and Julio Olivera's account. The latter underscores (and analytically derives) the "structural inflation multiplicand", which has to do with the changing structure of production under the import-substituting industrialization process of Latin American countries, whereas the self-feeding component receives less attention. In Simonsen's account, the structural inflation is dubbed the "autonomous component" (the "c_t" component), but is simply assumed - as a constant - rather than being derived in analytical terms, whereas the propagating mechanism (self-feeding component) assumes a pivotal role in his model. [18]

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differentiation among phases of inflation. In a later work, Simonsen (1979) criticized Friedman (1974)´s theory for taking the economy too quickly from price stability to hyperinflation, leaving aside the stages comprised in between these two circumstances. Before a hyperinflation, Simonsen mentions the challenges in the face of a "stability of a constant inflation", and displays concern with "the government-endorsed multiplication of institutional neutralizers of inflation", or indexation (for further detail, see Ramalho 2000). The byproduct of such measures was the "establishment of an inflationary process that, as it approaches neutrality, must bring embedded in itself a high self-feeding coefficient".

[18] The latest version of the inflation feedback model is presented in Simonsen (1995, pp. 129-130) and portrays an economy under full-wage indexation, with an inflation rate at period *t* denoted by $\boldsymbol{\pi_t}$ and the capacity of the economy to pay a wage rate compatible with the underlying distributional parameters of the social structure, denoted by the variable $\boldsymbol{k_t}$. A fall, maintenance or increase in this variable leads to situations of increase, stability or fall in the inflation rate, according to the following relationship: $\boldsymbol{\pi_t = (\pi_{t-1} - k_t) / (1 + k_t)}$. The neutral distributional equilibrium ($\boldsymbol{k_t} = 0$) allows for a constant real wage in time, so that inflation is simply fed by the previous period rate of price increases. The inflationary self-feeding mechanism is connected to capacity of the economy to pay growing wage rate, which in turn is dependent upon the institutional environment and the

This apparently minor change in emphasis from Olivera to Simonsen reflects the very transition from the first to the second round of the monetarist-structuralist controversy, which is why Simonsen's contribution became a cornerstone for subsequent analysis of inflation in Brazil, providing the framework for those discussions in the early 1970s, namely: his early distributional conflict perspective, the self-feeding inflation model, the relevance of unsynchronized price and wage adjustments, his "sawtooth" diagram illustrating the effects of inflation on nominal incomes, and the cautionary remarks concerning the difficulties involved in price freeze policies, also known as incomes policy, widely adopted along the 1980s in Argentina, Israel and Brazil. Moreover, he made constant efforts to merge the analysis of the Brazilian case with the overall developments in economy formal theory building, especially those of a North-American lineage.

Another contribution helpedt to connect the two rounds of the same decades-long controversy over the causes of inflation, while also bridged the gap between the North American and the Latin-American structuralist lineages, In a largely overlooked paper, James Tobin (1981) [19]

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structure of the economy, as well as on the long-run trajectory of growth (denoted by ***k***). Furthermore, inflation is depicted outside the simple framework of supply and demand in competitive markets, for "there cannot be free functioning of markets under mandatory indexation" (Simonsen 1995, p. 7).

[19] A few months earlier, Tobin (1980) extensively recollected what the "last ten years" had taught economists about stabilization policy. The term "inflation inertia" was cited twice. As former President of the American Economic Association, Tobin was in a rather privileged position within the profession when he stated that "[t]he inertia of inflation in the absence of nonaccommodative policies is the big issue" (p. 44). And also, "[t]o discuss the roots of that inertia and the sources of nonmonetary pressures for accommodation – administered prices, contracts, collective bargaining,

developed a taxonomy for the diagnostics for inflation that may very well be the 1980s inflation-centered analogue of Prebisch´s (1949) *Manifesto*. The passive money hypothesis was recast under new terminology and the monetarist plea is quickly dismissed on such terms.[20] Tobin is most direct and succinct in his classification of the three main types of causes to inflation, namely: *inertial inflation, specific price inflation and conflict inflation*.

By inertial inflation Tobin means "*the self-replicating pattern of wage and price inflation*", which "*once it is built into the system in a consistent manner it continues very much on its own*" (Tobin 1981, p. 23). In such an inertial setting, some prices feed into economy-wide price indexes, and then propagate onto other prices and wages, thereby eliciting the "*stubbornness of built-in patterns of wage and price inflation*" (p. 24). However, there exists a viable equilibrium path of real outcomes, on which the rate of inflation offers no threat to economic and political equilibrium. As long as the economy has adapted its conventions, institutions – in which we may include monetary and fiscal accommodative policies - and expectations - especially in regard to relative prices -, inflation poses no distortion to the economic process.

Finally, Tobin stresses "*that inflation is the symptom of deep-rooted social and economic contradiction and conflict*" (p. 28).[21] If players cannot agree to divide a growing pie, how will they concur with each other when dividing a smaller one? Moreover, Tobin draws attention to the

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distributive conflict, supply shocks, OPEC – is not to commit any vulgar errors or to violate any of the identities stipulated" in the quantity equation framework (Tobin 1980, p. 45).

[20] For more on non-accommodative policy costs see Tobin (1981, pp. 20-23).

[21] In such a framework, there is no equilibrium path. "The major economic groups are claiming pieces of pie that together exceed the whole pie. Inflation is the way that their claims, so far as they are expressed in nominal terms, are temporarily reconciled. But it will continue an indeed accelerate so long as the basic conflicts of real claims and real power continue" (Tobin 1981, p. 28).

aspiration gap that Rowthorn (1977) had explicitly modeled a few years before. An orthodox policy restricting demand would curb rates of growth of potential output, of real wages and of real returns on capital investment, while not necessarily holding down the "*standards of real income progress to which employed workers are accustomed or the profit rates that managers and shareowners expect*" (p. 28). In this sense, an economic downturn may, through further conflict, widen the aspiration gap, boosting inflation.[22]

Tobin's missing chapter is important for it reflects the *zeitgeist* at the onset of the troubled 1980s, a period in which the economics of the Keynesian Neoclassical Synthesis was fast-becoming a heterodoxy, as the perception of "disarray" overtook the economics profession by assault

[22] Tobin (1981) is also preoccupied with labor insecurity that comes with contractionary policies: "*The hope is that the exclusion of more and more people from the game weakens the more assertive groups. The fear is that the shrinking of the pie just makes the insiders more intransigent and protectionist. Reasoning by competitive logic does not help us in this syndicalist world*" (p. 28). Vera (2005) has recently demonstrated this very result in a post-Keynesian setting, where relative price shocks lead to severe and lasting conflict, not simply a transitory hike of inflation rates. Because of that, indexing wages by cost-of-living measures can be dangerous, especially if they account for prices that represent unavoidable costs to the whole society. "*Someone has to pay OPEC for oil, and not everyone can have incomes wages, or social benefits insured against such risks*" (p. 29). This last point echoes a common proposal at the time as to differentiate between core inflation and overall inflation (Okun 1981). That requires the exclusion of supply shocks from indexes, such as Simonsen (1983) and Lopes and

Bacha (1983) would later defend along the same lines.

(Goodfriend and King 1997). Moreover, it unearths a relevant network of ideas that provided a North-American precursor to a seemingly Latin American issue. [23]

The next section looks into the second round of the controversy over price stabilization between the monetarist orthodoxy and the somewhat hard-to-define heterodoxy in Brazil (see Bacha 1982 and Toye 1987).[24] Structural causes of price rises were sensitively downplayed, as the focus of theory shifted towards the propagation mechanisms of inflation, in contrast with the early debates on the relation between economic development and inflation. From the institutional standpoint, the "Brazilian indexing-style" (Fishlow 1974) made up for the inflation-magnifying mechanism readily recognized as the chief distinction making up for the allegedly unique case of Brazilian experience with inflation - e.g., Arida and Resende (1985) -, instead of structural and historical features emphasized by the structuralist models of the first generation, as we have seen in Section 2 above.

IV. THE SECOND ROUND OF THE MONETARIST-STRUCTURALIST CONTROVERSY

The world inflation of the 1970s rekindled debates over inflationary processes (Harberger 1978). The 1973 OPEC-driven oil price rise generated a worldwide inflationary bulge that set the grounds for an orthodox reaction against the Keynesian-inherited policies governments led all along the post-War period. The classic divergence reemerged with strength, eliciting a revival of academic and policy-oriented debates. As we have seen above, the long-lived inflations in Latin

[23] Although Bacha (1988) later credited priority to Tobin, Brazilian economists failed to acknowledge Tobin's analysis when they came across the inertial inflation hypothesis. More recently, Bresser Pereira (2010) and Serrano (2010) also acknowledged Tobin's contribution, albeit with less emphasis that we do here.

[24] Serrano (1986) has surveyed five different approaches gathered behind the assumption that the Brazilian inflation had a strong inertial component.

America provided the pretext for a further deepening of analysis on such matters. Some ideas were fished out from a not-so-distant past and reshaped under the guises of formal mathematical models, whilst new ones sprung out of the pressing economic landscape.

The second-round of the monetarist-structuralist controversy was triggered by the mid-1970s. The intellectual battle between monetarist economists - such as Pastore (1969) Contador (1977), Lemgruber (1978), among others stationed at FGV-RJ – and structuralist-(neo)-Keynesian economists was thus fought, at first, on the empirical turf. The main issues regarded the endogeneity of money supply in Brazil (Lemgruber 1977 and Cardoso 1979; 1918c), the effects of public deficits on the inflation via an accommodative monetary policy (e.g. Contador 1974; 1977 and Cardoso [1980] 1981a; 1983) and the effects of restrictive demand-management policies upon inflation rates by means of estimations of the Phillips curve for Brazil. The dispute became more contentious in the early 1980s, for intellectual and political reasons. Let us start with the latter aspect.

The 1980s were turbulent times and the thin line separating academia from policy-making in Brazil evaporated in the midst of a political struggle against the exiting twenty-year-old military regime. In this sense, the writings of such scholars reflect this political atmosphere filled with a drive for change, intellectually fueled by the challenges History posed to Latin American societies. As the political transition became increasingly more secure and the dormant inflationary "dragon" arose from its twenty-year "harmless" sleep, the politically militant arguments gave place to more technical proposals. An important part of such change has to do with their integration to public offices and their economic teams. Moreover, the economics profession began converging to a macroeconomic consensus at the international institutional level, where most of the scholars under our scrutiny held liaisons in the most prestigious academic and multilateral institutions.

The external debt crisis and the interest rates hikes that followed the oil shock in 1979 triggered a massive inflationary reaction in previously stable developed economies. But the tragedy that befell the Latin-American economies was many times more intense. The turmoil was rapidly associated with the immense resource constraint these economies suffered, eliciting a profusion of theoretical analyses of this rare phenomenon of rapidly increasing rates of inflation, historically attached to economies disorganized by wars and the ensuing occupation of the defeated countries. The classic cases of hyperinflation in the first half of the 20th century seemed however structurally different from the hardships Latin America endured , although the process had many similarities with those experiences, which required further investigation.[25]

In Brazil, the first half of the 1980s witnessed large-scale social and political transformations, as the military regime raised growing opposition in numerous fractions of society. As it so happens, economists' battling energy was harnessed towards actively trying to influence

[25] The famous effort by Thomas Sargent to explain the end of the four big inflations by inaugurating the application of the rational expectations hypothesis agitated the academic community of economists involved in stabilization matters. Sargent claimed that a credible commitment by the government with fiscal and monetary austerity could end inflation with barely any costs, for it would allow economic agents to internalize price stability into their expectations. Sargent's work challenged the idea of long-run adaptive expectations, turning these into forward-looking behavior. Therefore, agents could not be systematically fooled by monetary illusion. They would incorporate future price rises into the present price behavior, thereby accelerating inflation. Just as the Friedman-Phelps acceleration principle, Sargent's story seemed rather incompatible with chronic inflationary experiences in Latin America and, for some economists, even with the big four inflation cases he analyzed, as for instance in Franco (1986).

policymaking.[26] Abundant historical material on this period is prompt to show the stream of short articles published in newspapers engaged in a sweeping controversy.[27] Contributions suggested ways of redirecting policy away from full-fledged orthodox measures launched by the Minister of Finance Antonio Delfim Netto in 1980 in President Figueiredo's term, the last president of the military regime that rose to power in 1964. These latter were perceived as a severe hindrance to economic growth at the very moment the country needed most a booming economy, that is, during a major political transition.

The neo-structuralist economists involved in the controversy found it quite striking that macroeconomic "fundamentals" (budget and current accounts of the balance of payments) were in place, but left inflation unscathed. This raised doubts concerning the relationship between budget deficits and inflation, as well as the level of proportionality - and the true direction of causality - between monetary aggregates and prices. For instance, Arida and Resende (1985) were adamant in claiming the Brazilian budget deficit was close to zero and the current accounts of the balance of

[26] Moreover, at the onset of the 1982 financial crises triggered by the Mexican foreign-debt default, a conference was set to debate the perspectives concerning the Brazilian economy and the latitude enjoyed by the country´s economic policy in face of the severe liquidity constraint in international financial markets. The general ambience of the meeting is of criticism against the 30% exchange rate devaluation coupled with restrictive measures taken by the Brazilian minister of finance, Antonio Delfim Netto, which resulted in a combination of deep recession and an increase in inflation. The papers were collected and published in Arida (1983a). Also, the interventions by Eduardo Modiano (1983b, p. 139-153) and José Márcio Camargo (1983, p.181-188) are especially illustrative of the conflict approach in vogue at the time and demonstrate a connection to structuralist contention of a couple of decades earlier.

[27] See Bastos and Mello Neto (2014) for a survey on these contributions to the policy debate.

payments were on the positive side. And yet, inflation seemed to be stable at three-digit rates.[28] In this vein, it was argued that when contracts incorporate past inflation – by means of index-linkages or backward-looking behavior - conventional anti-inflationary measures of aggregate-demand restriction become ineffective and end up exciting social unrest, once it increases unemployment and aggravates recession.

Therefore, a mix of political discontent and theoretical rebellion fueled a yearning for institutional change and reform both in policy and in academia. As a result, it was politics that eventually summoned seemingly irreconcilable economic approaches under the banner of heterodoxy. However, as we point out below, when this feeble economic consensus was challenged later on - as the economists behind it became policymakers - compromise proved to be not only partial, but also too soft.

The literature alluding to this period in the intellectual history of Brazilian economics usually skips through the stage of the controversy, in which academic exchanges happen, and moves quickly to assess how these ideas have influenced policy design.[29] Alternatively, we assess

[28] A few months later, Gustavo Franco (1986, p. 48) published his PhD thesis amid the quarrel and, in a chapter devoted to provide analytical basis to inflationary inertia, he wrote: "*It is suggested that the mechanisms responsible for inertia are not related to the workings of fiscal and monetary policy so that there would be little that the latter could do to arrest inflations that are largely governed by inflationary inertia. That helps to explain not only the poor record of stabilization programs centered on financial policies but also some incredible successes achieved by programs that specifically addressed the inertia problem*".

[29] The exception is Serrano (1986 and 2010), who provides a critical interpretation of the theoretical advancements. However, he revises, only en passant, the early contributions by the scholars at PUC-Rio so he can focus on their application to stabilization policy.

the analytical developments set forth by these scholars, [30] highlighting the tensions that emerged within the "inertial inflation paradigm" (Arida 1992) from the late 1970s until the mid-1990s and quickly gained notoriety in the policy circles and academia.

The combination of internal and external forces unraveled a second-generation structuralist transformation problem, in reference to Craven's (1994) analysis of CEPAL's self-contentious first moments. However, at some variance with the first-generation problem, we sustain that this change was not a complete rupture with their previous stance on inflation theories. It was rather a displacement of emphasis, allowing for a higher level of consistency with conventional readings of inflation. The stripping of inflation theory of its structural and institutional aspects smoothed the transition of the concept of inflation inertia in the first round – meaning a self-replicating pattern of rising prices - toward the meaning prescribed by New Keynesian economics. The following sections narrate how the internal analytical puzzles within the structuralist camp of the second generation facilitated this move.

[30] A voluminous and dense theoretical production on the matter was published in technical volumes (such as Lopes 1979 and Bacha 1982) and also appeared on several editions of the most celebrated Brazilian academic journals at the time, such as the Revista Brasileira de Economia (FGV-IBRE), Pesquisa e Planejamento Econômico (IPEA) and Estudos Econômicos (IPE-USP), all of which were published by the main economic think-tanks in Brazil. Brazilian structuralist economists of this second moment all paid explicit homage to the seminal tradition of CEPAL, which was done by means of different methods of analysis, whether more historically driven – as in the FGV-SP contributions by Bresser Pereira and Nakano (1984) - or those mathematically formalized, such as the works by economists at PUC-Rio and at the University of São Paulo, such as Adroaldo Moura e Silva (1981).

V. THE SECOND-GENERATION STRUCTURALIST TRANSFORMATION PROBLEM

The self-entitled heterodox opposition to alleged monetarist *status quo* centered on the latter's apparent oblivion to an "indubitable" fact (see Simonsen 1989, p.14), namely: that the widespread use of indexing schemes under persistently high rates of inflation had led to a substitution of domestic currency as unit of account of contracts for other referential assets, whose values are denoted in terms of the legal tender, which comes to define the terms at which contract obligations are met (Carvalho 1994, p. 109). In a word, indexation tends to institutionalize the price-wage spiral (Simonsen 1995, p. 5) and imparts a mechanical drive to it (see Heymann and Leijonhufvud 1995, p. 31).

In the early 1980s, heterodox economists viewed inflation in Brazil as a fully-inertial phenomena (Resende and Lopes 1982; Arida 1983b and 1984; Resende 1984; Lopes 1984a; Pereira and Nakano, 1984). However, consensus is a rare phenomenon and often conceals profound differences among its participants. Despite the agreement upon the inertial character of inflation, five different models of inflation competed to explain inflation dynamics in the Brazilian economy during the 1980s. The rational expectations model (Sargent and Wallace, 1975; Sargent 1982) and the Friedman- and Phelps-type adaptive expectations models (e.g., Cagan 1956) rationalize acute inflationary processes widely covered by the literature and shall not occupy us here. Alternatively, the institutional interpretation stated that in a highly indexed economy, such as Brazil, a great portion of basic macroeconomic prices (exchange rate, interest rate, wage etc.) "rise by decree", according to the previous period´s inflation rate.[31] Alternatively, we focus on two neo-structuralist

[31] For instance, see Silva (1981) and Bresser Pereira and Nakano (1984). In order to keep the structure of relative prices in balance, even the non-indexed prices are induced to follow the same pattern. It is considered costly not to abide by the formal rules imposed by legal institutions and, even in those sectors not subject to formal indexation, agents´ expectations tend to follow price

explanations of a fully inertial inflation, namely: the relative wages model and the distributional conflict model.

The relative wages model proposes that institutional, political and cultural factors affecting the labor market engender workers´ resistance to (downward) changes in relative wages. In an inflationary environment and unsynchronized structure of readjustments, workers seek to periodically restore their nominal wages according to the peak real wage, thereby stabilizing both the average real wage effective in the previous period and, in the absence of exogenous shocks, the wage structure as well. [32] It consists of contributions by Silva (1981) and Bresser Pereira and

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behavior in indexed sectors This model resembles somewhat vaguely Tobin's analysis just seen above. The underlying idea is that indexation requires changes in the "relevant model" of the economy´s functioning and that agents understand these changes. This is different from the rational expectations model, in which indexation changes monetary policy by influencing government´s behavior. Here, it is the structure of the economy that is transformed by this institutional mechanism, regardless of government´s tendencies. Widespread formal indexation and absence of demand shocks guarantee the inertial pattern of inflation.

[32] Non-cooperative behavior among distinct groups of workers and their interest in defending the relative wages would be enough to generate the inertial pattern of inflation. This takes place independently of the existence of both formal indexation and distributional incompatibilities between wages and profits – that is, even if workers would become satisfied with their average real wage. The rationality behind this behavior is to be found in the commons problem (Franco 1995). As Furtado had anticipated in 1954, if any group in particular accepted an adjustment below the previous period´s peak real wage level, it would face a loss in relative real wage, once there wouldn´t be any plausible reason why the other groups should claim lower adjustments as well.

Nakano (1984), as well as by economists at the PUC-RJ school, such as Resende (1979), Lopes (1979), Resende and Lopes (1979).

The distributional conflict model is found mostly in Arida (1982, 1992), Bresser Pereira and Nakano (1983), Modiano (1985, 1988), Arida and Resende (1986), Franco (1986), and less prominently in Modiano (1987) and Lopes (1983 and 1989). In this setting, inflation results from the social impasse derived from an unresolved distributional imbalance between profits and wages – rents, taxes and other forms of income - that may lead, given some specific hypotheses, to the inertial behavior of inflation. Entrepreneurs and workers have limited power in determining the others´ effective income. The problem relates to the dynamics of the "aspiration gap" (Rowthorn 1977) that triggers the wage-price escalation up to levels that simply reproduce the imbalances previously observed. Agents act to defend their peak real wage levels, and the relevant aspiration gap is thus given by the difference between peak and average real wage levels. This gap defines the degree of structural distributional incompatibility, which stems from a social impasse among the main income groups or classes, not from uncertainty or coordination failures in individual agents´ potentially consistent plans of action. This means that inflation inertia will result as long as the terms of conflict in distribution are stable. The level of inflation will be a function of the size of distributional imbalance and of the system of indexation, be it formal or informal.[33]

Only a coordinated (coopertative) movement could achieve this outcome neutralizing the distributional effects that would result from the lowering of inflation rates.

[33] A corollary of the conflict approach is that inertial inflation does not depend on the existence of unsynchronized readjustment of prices along with indexation practices, as in the relative wages model, but on the relative power of firms to maintain their mark-up over costs intact and that of workers to restore their real wages according to past inflation. Therefore, given the degree of conflict, inflation levels will be determined by the range and frequency of the indexation practices,

Both approaches are heterodox in their essence, for the strict refusal of aggregate demand restriction measures. They also share the concept of "inflationary equilibrium", already present in Tobin's (1980) assessment of stabilization policy, in which changes in the regime of nominal wages readjustments would only push prices upwards, leaving average real wages unaffected. However, the forces driving this equilibrium have slightly distinct properties. The main difference between these two inertialist models refers to assumptions regarding firms' mark-up behavior and the ensuing matter of workers' rational decision-making. This distinction reflects, above all, the more or less specified form assumed by "distributional conflict" in these models. For Bresser Pereira and Nakano (FGV-SP)[34] inflation is but a symptom of the inherently conflictive character of the economic system, whereas in most of the PUC-RJ models[35], it is mostly due to the staggered structure of government-sponsored wage indexation scheme. In other words, this latter modeling strategy takes conflict as more of a placeholder – altogether with other types of exogenous shocks - than a substantial first-order determinant of inflation. It is really an assumption about labor market institutions, not of the economy-wide distributional dynamics. Workers´ aspirations are formally faced with an exogenous upper bound, to which they must rationally look up to, so as to at least maintain their relative position within the structure of claims on output. This institutional detail of indexation is a recurrent theme in the models crafted on these static properties of workers' behavior.

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as well as by past inflation trends. Curtailing inflation requires not only the complete extinction of indexation practices and the dissolution of inflationary memory, but also the elimination of all distributional incompatibilities.

[34] Similar analyses can be found in Taylor (1979, 1983) and Ros (1984).

[35] Exceptions should be made to Modiano (1987) and Bacha (1982), in which the change in target real wages can be varied according to the patterns of income distribution, based on implicit fairness issues.

At a more abstract level, the relative wages models (un-)intentionally approximate structuralists to New Keynesian approaches; hence the relevance of Tobin's input (see section 2 above).[36] Through this point of contact, doubts were raised which concerned the rationality premises inserted in the model. The first involved explaining why workers bothered claiming for nominal wage increases, if their efforts are self-defeating in the inertial inflation case ($w - p = 0$ or $\omega = \bar{\omega}$). The second question involves providing analytical support to the notion that workers would choose to link wages to past inflation ($w = p_{-1}$).[37] Finally, there was a decades-long puzzle regarding the policy implications of the inertial inflation dynamics, namely: is it possible to stabilize inflation without upsetting the distributional profile of the economy? In other words, is the distributional neutrality condition a binding constraint of a stabilization procedure? We turn to these aspects next.

VI. THE PUZZLES WITHIN THE INERTIAL INFLATION HYPOTHESIS

Two basic puzzles beset the inertial inflation "theory" as it was stated by Lopes (1980, 1984a), Arida (1982) and Lara Resende (1979), namely: why would workers persist in bidding up nominal wages if these latter would always result in the same real wages as before? And: why, in doing so, they would link wage increases to past rates of inflation? Serrano (2010, pp. 407-409) has

[36] Ros (1989) interprets this view as congenial to the New Keynesian macroeconomics in vogue at the late 1970s and quite distinct from the structuralist conflict approach. In this setting, inertia is construed as a time lag necessary for prices to react to a shock instead of the resistance to slow down inflation once it is on the move.

[37] Serrano (2010, pp. 408-410) was able to find ways out of these puzzles, by switching the value of $x = 1$ to $x < 1$; that is, by turning their model into a likened variant of Bresser Pereira and Nakano (1984).

found no "rational justification", in their models, for workers to behave in such a fashion. In fact, Lopes (1984b) argues clearly that such behavior is independent of the existence of indexation rules or overall index-linkages of contracts, or even of adaptive expectations by economic agents; a straightforward defensive behavior or outright militancy by workers could guarantee successive rounds of wage negotiation aiming at restoring peak real wage levels.[38]

Wage Setting and Mark-up Behaviors: a basic framework

Following Bacha and Lopes (1983, p. 3), we begin by defining the real average wage in an indexed economic setting, which can be formally stated as

$$\bar{\omega} = v - (\hat{p}/t)$$

where $\bar{\omega}$ stands for the natural log of average real wage (and is assumed to be always greater than zero), v for the peak real wage, $\dot{p}$ for the inflation rate and t depicts the number of within-year revision of wages ($t = 1$, for yearly revisions; and $t = 4$ for quarterly wage adjustments)[39]. If we insert the above relationship into a simple functional distribution profile of the whole economy

[38] According to Serrano (2010), this unfilled blank in the specification of their models results immediately from the assumption of an exogenous fixed markup rule. In this sense, the argument goes, a very peculiar conflict model is built, in which the conflicting claims are always resolved in favor of firms and the real wage is determined by the gross profit margin and by labor productivity. In such a setting, the average real wage in endogenously determined. Variations in the nominal wages would thus have no distributive effects. Workers become powerless, entrepreneurs fully passive and inflation a sterile exercise.

[39] The effect of the interval between wage settlements is more clearly seen by use of the formula: $\widehat{w} = hp\hat{} + (1 - h)\hat{p}_{-1}$, which indicates that nominal wage growth is a weighted average of current

$$y = m + \omega$$

in which y denotes the natural log of real income and m, real markup rate, and ω for real wages[40]. If we assume $\omega = \bar{\omega}$, we find that

$$m = y - v + (\hat{p}/t)$$

that is, real markup decreases in response to increases in peak real wage, and responds positively and proportionally to price inflation, other variables held constant. In taking time-derivatives of the log values of the variables (and assuming $n = 1$, given its exogenous definition by policy) we get growth rates of each one, denoted by the "hat" sign above them:

$$\hat{m} = \hat{y} - \hat{\omega}$$

or

$$\hat{m} = \hat{y} - \hat{v} + \hat{p}$$

From the above relation, we can delineate three cases. First, a real markup rate ($\hat{m} = \hat{y}$) growing at par with real output implies immediately that $\hat{p} = \hat{v}$. That is, changes in nominal wages have null effect on the distribution of income, and acceleration of inflation ($\hat{p}$) results entirely from

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and lagged inflation rates, with weighting being given by $h = 1 - \left(\frac{1}{2t}\right)$. Thus, if wage settlements happen once a year, $t = 1 \rightarrow h = 0.5$, hence $\hat{w} = 0.5\hat{p} + 0.5\hat{p}_{-1}$. And, in case of a quarterly frequency of wage adjustments ($t = 4 \rightarrow h = 0.875$), then $\hat{w} = 0.875\hat{p} + 0.125\hat{p}_{-1}$. The gist is that the shorter the interval, the more sensitive will be nominal wages to ongoing inflation rates, thereby speeding up next period's inflation rate.

[40] We depart from $y = (1 + l)\omega$ and assume that $\ln(1 + l) \approx \ln(l) = m$, in which, as seen above, m stands for the real mark-up over costs.

attempts to raise real wage peak levels ($\hat{v} > 0$). Moreover, firms accrue every gain from economic growth. Second, $\hat{v} > \hat{p}$ would require frequent adjustments on the part of firms to restore their desired real mark-up rate. This is the stand taken by Bresser Pereira and Nakano (1984) and the PUC-Rio structuralists at their first moments in the debate (see section 5.2 above). The chief point is that incomplete power of groups over the behavior of competing groups implies that adaptation is never complete: the permanent gap separating desired and average real incomes inherently entices new rounds of dispute. Above all, desired levels of income were in no way deemed constant and could be affected by the very process of economic development. The systematically alternated attempts to achieve desired real incomes by each fraction of income claimants infused an internal thrust into inflation, keeping its rates stable at a given level if peak levels remained constant. Nominal mark-ups could vary freely and faced no determinate upper bound; also, the non-labor costs of imported inputs are taken into consideration, together with interest as a cost-push factor (or the Patman effect) and the inflation-rising force of changing tax rates. Conflict-based inertial inflation is thus a potentially unstable phenomenon.

Alternatively, we can see the third possible case, whereby a constant real markup rate ($\hat{m} = 0$) implies that

$$\hat{y} + \hat{p} = \hat{v}$$

This relationship means that the peak real wage varies with acceleration of price increases and real output growth. Solving for a speeding-up inflation, we get

$$\hat{p} = \hat{v} - \hat{y}$$

which clearly holds workers income claims accountable for the increase in inflation rates. Were peak wage growth to be paired up with output growth ($\hat{v} = \hat{y}$), inflation would be held constant ($\hat{p} = 0$). Thus conflict can be destabilizing solely because wages are pushing beyond the socially

agreed upon income share (which is frequently termed "underlying structure of income distribution"). Then, understanding and taming inflation requires reconciling wage demands with other groups' claims. Wage indexation is thus of paramount importance in this approach. We find such an assumption in the main contributions from the PUC-Rio school. [41]

Next we look into what this stand on wage setting behavior implies in terms of firm behavior.[42] If firms seek to maintain a constant real mark-up over costs, they will adjust nominal mark-ups along the cycle of nominal wage claims. Firms are then logically understood as fully defensive decision-makers.[43] But, if firms simply react to a rise in wage bidding, what triggers workers demands? Conflict can arise for a myriad of reasons. In the structuralist tradition, discrepancy between real wage and workers' targeted real wage stems from a sudden relative price change, such as a large-scale devaluation of the domestic currency or, in the case of Latin American

[41] See Bacha and Lopes (1983, p. 11), Lopes (1986, p. 50), Franco (1986, p. 13) and Modiano (1988, p. 8-20). In the 1990s, under the hot debates inside the economic team for the Real plan, Gustavo Franco would make mention of this "automatic pass-through [of cost rises], with a fixed mark-up" (Prado 2005, p. 551). Yet more recently, Taylor (2004, p. 73) has also made the same point.

[42] Michal Kalecki is a prominent reference of the early contributions of the PUC-Rio branch. See, for instance, Bacha (1982) and Franco (1986, p. 44).

[43] More recently, Taylor (2004, p. 77) has reasserted this in quite straightforward fashion: "'Conflict inflation' can be said to occur when workers' aspirations (…) are not fulfilled. The wage peak is increased less than proportionately to the real wage loss" within the interval between readjustments".

Structuralism, high food prices.[44] This aspect points to the question regarding the magnitude of the lagged-inflation pass-through coefficient.

To provide some support to their claims, economists at PUC-Rio marshaled empirical evidence on the assumptions of $a = 1$ and $\hat{p} = \hat{p}_{-1}$; that is, indexation was believed to impose, at that time, a full-memory to the price system, generating the fully inertial component in the absence of shocks. However, the conflict dynamics was formally deemphasized in their narrative, by recognizing that incomes policy pursued by the government was the chief cause of the systematic cost-of-living wage adjustments. From this viewpoint, we could then formalize the conflicting claims component as a function of the difference between average and effective real wages as follows: $\left[c = c\left(\frac{\bar{\omega}}{\omega}\right)\right];\ c' > 0$. Conflict would thus raise the level ($c > 0$), but could not explain the inherent momentum, of inflation (given by the parameter a).[45]

[44] Take for instance the model set up by Modiano (1988, p. 95-97). Simply put, the economy could be understood within a model contemplating a single aggregate production function e only two inputs (labor and imported intermediate goods). Adjustments would face a price frontier that inversely relates real wages (w) and exchange rate (e), which provides the "distributional equilibrium". Formally, $\phi(w, e) = 0; \phi_1' > 0\ and\ \phi_2' > 0$. Exchange devaluations would imply reductions in real wages. Additionally, an inverse connection between inflation rates and the level of average real wages concludes the model, whereby $w_m = \psi(\xi, \hat{P}); \psi_2' > 0$. Once again, conflict is but an original inflationary pressure (such as $c > 0$), but takes no role in perpetuating inflation.

[45] In this situation, Simonsen (1970) has conveyed that the government swapped the arithmetic of incomes policy for the distributive conflict determinants of inflation. Workers´ aspirations are not taken into consideration substantively. The best they can achieve is their ongoing relative position previously to the perturbing shock.

In sum, the principal assumptions behind the differences between the inertialist groups regard firms' mark-up behavior and workers' aspirations. This distinction reflects above all the more or less specified form assumed by "distributional conflict" in these inflation models. As we have seen, both sides share the concept of "inflationary equilibrium", in which changes in the regime of nominal wages readjustments would only stoke up prices, leaving average real wages unaffected. However, the forces driving this equilibrium have slightly distinct properties. [46] Antagonism between groups collapses into an assumption about labor market institutions, bypassing the complexities of economy-wide distributional dynamics.[47] Workers´ aspirations are formally given an exogenous upper bound, to which they must rationally look up to, so as to at least maintain their relative position within the structure of claims on output. No discussion is carried out as to why this peak real wage should remain constant. In its place, the institutional detail of

[46] Similar analysis can be found in Lance Taylor (1979; 1983) and Ros (1984).

[47] Ros (1989) takes up on this issue rather straightforwardly, by specifying that: "Pricing in the private sector is such as to achieve a given profit markup on current unit costs, and so the profit share of gross income is also unaffected by inflation. This assumption of markup resistance (or "real profits resistance") is a simplifying one, and is meant to dramatize a common asymmetry in capitalist and workers pricing policies, reflecting a situation where the balance of market power in favor of sellers in the product markets is much more pronounced than in the labour market. All this leaves the wage share and the real wage to be determined as residuals (…)". And, to reinforce the point we have just made above about assumption on the labor market, he claims: "The asymmetry is common at least in Latin American countries and models. In this respect, the latter differ from Scandinavian-type models of inflation where—due to centralized wage bargains in the labour market, strong international competition in product markets and a regime of fixed nominal exchange rate—profits, rather than wages, are the residual share".

indexation is a recurrent theme in the models crafted on these static properties of workers' behavior. It fulfills the blanks regarding workers' rationality premises. The first involved explaining why workers bothered claiming for nominal wage increases, if their efforts are self-defeating in the inertial inflation case ($\hat{w} - \hat{p} = 0$ or $\omega = \bar{\omega}$). The second question implied providing analytical support to the notion that workers would choose to link wages to past inflation ($\hat{w} = \hat{p}_{-1}$).[48]

It is rather telling that such features would pose any trouble to these scholars. If we recall the works by George Perry (1980), Charles Schultze (1981), Arthur Okun (1981) and James Tobin (1981) on the self-sustaining thrust of inflation, they relied on conventions, norms and general institutional details, which were deemed perfectly suitable factors accounting for such a behavior. Given their academic background, it is yet more puzzling that the economists at PUC-Rio found it hard yielding to an argument based on such ad hoc assumptions points to the self-imposed requirement of conforming methodologically, in some degree, to the emergent phenomenon of the rational expectations canon. At some point, the argument goes, forward-looking indicators would have to override workers' behavior.

This requirement engendered enormous analytical trouble. A fisrt solution consisted in assuming several exogenous unanticipated shocks coming from government-endorsed policies such as monetary correction of public taxes and of public utilities fees, maxi-devaluations of the domestic currency, increased frequency of wage adjustments and so on. Under such circumstances, relative price changes would fool workers into "money illusion", which would trigger wage bid-ups in the subsequent period. In the absence of such shocks, however, it became rather uncomfortable to couch the self-sustaining behavior of inflation on workers' adaptive behavior.

[48] Serrano (2010, pp. 408-410) was able to find ways out of these puzzles, by switching the value of $x = 1$ to $x < 1$; that is, by turning their model into a likened variant of Bresser Pereira and Nakano (1984).

The second solution was found in the relative wage dynamics, a shortcoming that Arida (1982) had previously underlined without raising any alarm. A copious literature of the 1960s and 1970s had shown that discrepancies among wages in different industries could give rise to catching-up behavior of labor compensations that would create sustained cost-push pressures on inflation, rendering price indices inflexible downwards (see Laidler & Parkin 1975). This inter-sector wage dispute solves the problem but leaves open the question of how workers obtain the information concerning wage adjustments in other sectors. Besides, why should workers disregard in today's wage bid, as in backward induction, future wage adjustments claimed by workers in other sectors as a response to the disequilibrium generated by today's claim? What would prevent the explosive behavior of wage claims? The answer lies in one expression: wage indexation. Once propagation mechanisms have taken over the determination of price setting behavior, a successful stabilization hinges necessarily on dismantling the widely indexed price and wage structures.

However differently each camp saw it fit to classify the causes of inflation and its propagating mechanisms, the nature of policies required to deal with them were not in dispute; both sides of the structuralist camp disparaged any hope leveled at the efficacy of demand-management anti-inflationary measures. Alternatively, stabilization of prices should be achieved through an adequate management of wage policy coupled with a disciplining of mark-up rates. Conflict should be ameliorated somehow by way of a social pact. Uncertainty came down to one point: would society adhere to it in a voluntary or compulsory fashion? Next section thus addresses the policy implications of the PUC-Rio approach, that is, the requirement of distributional neutrality.

The binding neutrality condition

A successful stabilization should see to three binding conditions. First, the structural distributional incompatibility had to be stabilized, which meant keeping steady the difference between negotiated and actual wages. Second, the wage indexation had to be suppressed and, third, the system's

inflationary memory had to be wiped out. It should be sufficiently clear by now that these aspects are not independent from each other. For instance, transposing the distributional profile from a highly inflationary environment to one where prices rise only moderately amounts to reproducing the previous inflation-breeding distributive structure. Wiping out the inflationary memory would become, under such circumstances, almost impossible, and therefore, the same could be said of eliminating wage indexation schemes.

Following Tobin (1981), Bacha (1988), pointed out that inertia could be understood as a coordination problem inside a soccer stadium, where the crowd stands in order to watch the game, when it would better suit the spectators to sit down. However, that would only be obtained if everybody sat simultaneously. It would require the referee (meaning the government) to stop the game and threaten to proceed only after everyone has sat down. In economic terms, inflation is a result of unsynchronized behavior in price and wage adjustments. This diagnosis entailed a policy prescription that would bring all incomes to their average levels – and hence to mutual consistency - , therefore discouraging agents to try and run ahead of inflation - or, metaphorically, standing up again on the bunkers in order to get a privileged view of the game.[49] This is termed the "distributional neutrality" condition for a sustainable stabilization, and it had two facets.[50] The first

[49] Franco (1986, p. 23) also noted that indexation cut the link between "the 'height' of the Phillips' trade-off" and the inflationary expectations, thus having to do with "problems involved in engineering coordinated wage-price restraint as part of a stabilization effort".

[50] Unlike Tobin's story, nothing is said about the people that could not get in to watch the game. To reinforce the argument forwarded in the previous section, the conflict story thereby told takes as given the underlying pattern of distribution of income as well as the productive capacity of the economy. By doing so, it becomes a rather different one. Conflict becomes exogenous - a shift

implied achieving the conditions for distributive neutrality at the analytical level. The second was sought after at the policy level, albeit conditioned by the former, to which we now turn in more detail.

Lopes (1986, Chapter 6) provided a rather didactic exposition of the "inflationary process", which is remarkably telling of the way economists at PUC-RJ pictured inflation. The starting point is the typical neo-structuralist national accounting identities, as in Taylor (1983). After constructing both the indexed wage equation and the inflation equation, closing the model allows us to attain the inflationary equilibrium:

$$\hat{p} = \hat{p}_{-1} + \delta\hat{n}^*$$

in which $\hat{n}^*$ denotes the change in nominal mark-up rates and $\delta = \frac{n^*_{-1}}{1+n^*_{-1}}$; as usual, "hats" over variables indicate proportional rates of change. In this simplified version, inflation drifts are caused by variations in mark-up rates. Should firms stick to the average profit rate of the economy, the inflationary equilibrium is guaranteed. But how do wages behave in this economy? Whenever inflation exceeds expectations, firms adjust their mark-ups to maintain real profit rates. By contrast, when inflation rises, real wages are eroded and income distribution is shifted in favor of firms. To see that more clearly, we can define $\sigma = \frac{wN}{pY}$ as the wage share, which can also be written in terms of real wage ($\omega = w/p$) and labor productivity (Y/N): $\sigma = \omega/e$. Taking logs and then time-derivatives gives us the rate of change in the wage share: $\hat{\sigma} = \hat{\omega} - \hat{e}$; the author also defines a target inflation rate ($\hat{p}^*$) workers take into account during the bargaining process. Lopes reached the conclusion that altering the inflation target affects the distribution of income by the following relationship:

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factor - to the problem at hand: the coordination of agents' expectation within a commons problem. (Biderman *et al*. 1996, p. 238).

$$\hat{\sigma} = \hat{p}^* - \hat{p}$$

This result unveils the daunting difficulties involved in any stabilization plan. Whatever outcome should hold which differs from workers fully achieving the targeted inflation rate implies a change in the distributional profile of the economy. If targets are underestimated, wage share is reduced from its inflationary equilibrium point. By contrast, if policy is more effective than predicted, distribution shifts in favor of wages. In the final analysis, inflation will be curbed by use of policy instruments to suppress claims from agents facing relative income losses. How should this be achieved?

The analytical limits of the model were disquietingly narrow, leaving out the solution to distributional effects across firms and across labor groups, as well as functional distribution categories. This hurdle pointed to one additional problem: the inter-sector lack of synchronism of wage and price adjustments. Eduardo Modiano (1988) proposed one way around this obstacle, which consisted of gradually coordinating contract adjustments by means of a set of conversion rules that steered all contract values towards their average real values, measured in a stable unit of account in the post-disinflation period. Doing so required that no major redistributions of income and wealth were attempted. If these conditions were to hold, a disinflationary "neutral shock" could restore the patterns of income and wealth distribution prior to disinflation. Underlying this neutrality condition was the notion that a fully inertial inflation kept real incomes dynamically stable at their average levels; or, as Furtado (1954) claimed back in the 1950s, it was distributionally and dynamically neutral.

In the model sketched out above, as well as in Arida's (1982) model, a monetary contraction or a policy of price controls would necessarily imply a downward adjustment of the mark-up rate. Therefore, an adequate policy of wage control should accompany such disinflation measures, in order to maintain intact the pre-stabilization distributional profile. Needless to say, achieving such a

result in the real world would prove much more complex than theory allowed one to grasp. Besides, a whole range of details were only seen within the scope of partial equilibrium analysis, such as exchange rate management, the conversion of tax collecting intervals and interest rates to the new state of low inflation, as well as the portfolio adjustments during the transition.

VII. CONCLUDING REMARKS

This paper aimed to highlight the analytical tensions within the inertial inflation framework, which help to understand why this theoretical endeavor did not manage to muddle through the emergence of a new neoclassical synthesis. By matching together normally unrelated threads of historical developments, we provide a narrative in which the legacy from the Latin American Structuralists is gradually absorbed and processed into the newly emerging modeling mathematical formats of the new neoclassical synthesis, at least in its New Keynesian camp. We aimed at revealing the tensions and the selective process by which certain features are dropped in favor of more model-friendly assumptions. The emphasis and connection among the contributions by Furtado, Olivera, Simonsen and Tobin constitute the main novelties of this paper. They have been duly noticed in early works in the history of economic ideas, but our narrative stands out in that we seek not to provide a rational reading of history, but rather an account of how difficult the construction of consensus can be within the community of economists, even on an abstract theoretical level.

Instability stemmed first and foremost from the choice of method. The mechanical models built by the neo-structuralists (unintendedly) de-emphasized institutions and structural features, which were denoted by specific “parameters” in a-historic deductive models. Consequently, the second-generation models of inflation of this lineage tended to assume – rather than explain - long-term processes of structural change and their distributional imbalances. The contributions made by the group of economists from PUC-RJ, as well as in the contributions by Bresser Pereira and

Nakano (1984), from FGV-SP school of economics, under-rated basic causes of inflation in favor of the importance of the propagation mechanisms embodied in indexation practices.

Particularly regarding the PUC-RJ economists, the role played by distributional conflict rapidly turned into a "supporting character" in the plot, remembered only when it suited the argument being made. Once the notion of conflict was no longer useful, the inertial inflation story was stripped from its structuralist substance, and its scope was massively narrowed down to the spontaneous non-synchronization of price and wage readjustments. As a result, the inertial inflation hypothesis became more congenial to the New Keynesian formulations, found in Calvo (1978), Gray (1976) and Fischer (1977).

Of course the decline of the inertial inflation hypothesis does not rest solely on these analytical problems and discourse format issues; yet, one cannot deny their relevance. Despite differences in working the causes and propagating mechanisms of inflation, the policies required to deal with them were not in dispute; both sides were highly skeptical of the efficacy of orthodox anti-inflationary measures. Stabilization of prices should be achieved, alternatively, through an adequate management of wage policy coupled with a disciplining of mark-up rates. Conflict should be ameliorated somehow by way of a social pact. The question was: would society adhere to it in a voluntary or compulsory fashion? This points our discussion to the policy implications of these theories. An inertial inflation required the attainment of distributional neutrality at the policy level, which proved disquietingly hard to resolve in both the analytical and the policy dimensions. The analytical requirements of distributive neutrality, as clearly outlined by Lopes (1986, p. 50-62), proved not only exceedingly unrealistic, but also entailed impractical – and, to some extent, untenable - policy requirements for achieving distributive neutrality in the real world. The diversity of approaches marching under the banner of the "inertial inflation hypothesis" provided little help in sorting out these policy puzzles. The theory failed to meet the required external consistency, as reality proved resistant to the policies derived from it,. The ensuing evasion of the small group of

PUC-RJ economists from the inertialist camp concluded the destabilizing process of the theory it was supposed to deliver.

Future material will further substantiate the instability of the inertial inflation hypothesis by fleshing out tensions within the academic community of the economics profession in Brazil. As we have hinted above, the works scholars at PUC-RJ published along the 1980s gradually evolved from a seemingly distributional conflict approach - incarnated in a relative wages model of inflation - to a fiscally-dominated understanding of inflation. Hence, two further sets of problems must be tackled. First, the need to differentiate the academic group, situated in the economics department of PUC-RJ, from the other "heterodox" proposals in the aftermath of Cruzado Plan's debacle. The development of the inflationary crisis provided further refinement in the understanding of the dynamics of inflation in Brazil, which may have defined the magnitude of political constraints faced by any stabilization policy in the context of an accelerating inflationary process. The second aspect of this change in both focus and emphasis concerns the fiscal element, which receives increasing importance towards the end of the 1980s and becomes central by 1994. These two aspects can reveal how these scholars-turned-policymakers' works smoothed the transition from this regional understanding of inflationary inertia to the concept upheld by the New Neoclassical Synthesis, thus accounting for the decline of the inertial inflation hypothesis in Latin America.

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